



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

41-02-05

Log Event A

Borehole Information

| | | |
|---------------------------------|---------------------------------|----------------------------------|
| Farm : <u>SX</u> | Tank : <u>SX-102</u> | Site Number : <u>299-W23-223</u> |
| N-Coord : <u>35,509</u> | W-Coord : <u>75,747</u> | TOC Elevation : <u>Unknown</u> |
| Water Level, ft : <u>119.00</u> | Date Drilled : <u>7/31/1978</u> | |

Casing Record

| | | |
|----------------------------|--------------------------------|--------------------|
| Type : <u>Steel-welded</u> | Thickness : <u>0.280</u> | ID, in. : <u>6</u> |
| Top Depth, ft. : <u>0</u> | Bottom Depth, ft. : <u>130</u> | |

Equipment Information

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|-----------------------------------|---|------------------------------------|
| Logging System : <u>2</u> | Detector Type : <u>HPGe</u> | Detector Efficiency: <u>35.0 %</u> |
| Calibration Date : <u>03/1995</u> | Calibration Reference : <u>GJPO-HAN-1</u> | |

Logging Information

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|---------------------------------|---------------------------------|---------------------------------------|
| Log Run Number : <u>1</u> | Log Run Date : <u>4/28/1995</u> | Logging Engineer: <u>Gary Lekvold</u> |
| Start Depth, ft.: <u>0.0</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>24.5</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |

| | | |
|---------------------------------|---------------------------------|---------------------------------------|
| Log Run Number : <u>2</u> | Log Run Date : <u>5/1/1995</u> | Logging Engineer: <u>Gary Lekvold</u> |
| Start Depth, ft.: <u>23.5</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>98.5</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |

| | | |
|---------------------------------|---------------------------------|------------------------------------|
| Log Run Number : <u>3</u> | Log Run Date : <u>5/2/1995</u> | Logging Engineer: <u>Bob Spatz</u> |
| Start Depth, ft.: <u>123.5</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>97.5</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |

Borehole

41-02-05**Log Event A**

Analysis Information

Analyst : J.R. BrodeurData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 9/14/1995**Analysis Notes :**

This borehole was drilled in 1978 as a steel cased, 6-in.-nominal-diameter borehole. The thickness of the casing in this borehole was not recorded in the drill logs and could not precisely be determined in the field. It is estimated to be 3/8 in. The casing correction used in the data analysis was that for 0.375 in. A water correction was not applied to the data below 119 ft. Grout was placed around the casing from 0 to 18 ft. The thickness of the grout is unknown, and a grout attenuation correction has not been determined; consequently, the concentration data for this depth region is underestimated.

This borehole was logged in three log runs: run 1 from 0 to 24.5 ft, run 2 from 23.5 to 98.5 ft, and run 3 from 123.5 to 97.5 ft.

Field verification showed good agreement between pre- and post-survey spectra. The digital spectrum stabilizer was not activated, and there was energy drift between spatially sequential spectra making it necessary to re-energy-calibrate some spectra. This does not affect the efficiency or the concentration determination.

Cs-137 was found from the surface down to about 38 ft. It was also found in two thin zones of slightly elevated activity at 65 and 110 ft. At other discontinuous locations, Cs-137 was found at levels just above the MDA values, and detection cannot be considered statistically certain because the lower error bar extends below the MDA value.

Log Plot Notes:

Three log plots are provided for this borehole, including a plot of the Cs-137 log, a plot of the natural gamma-emitters, and a combination plot.

The Cs-137 log is provided as a separate plot to document the concentration and show its distribution. The concentration error estimations are shown as error bars representing the 95-percent confidence interval. MDA values were calculated for every depth measurement location and are shown on the plot as open circles.

The natural gamma plot is made of logs of the naturally occurring K-40, U-238 and Th-232. These logs are provided to show geologic features and permit correlation of these data with other geologic information. The 95-percent confidence interval error estimations and MDA calculations are also shown on these logs.

The combination plot showing individual radionuclide logs is provided to permit correlation of the data between logs and with other boreholes. The plot includes the Cs-137 log, the natural gamma logs, the total gamma log calculated from the spectral gamma data and the Tank Farms gross gamma log obtained from the NaI-based logging system.